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USSR WORK CONCERNING ACTION OF INDUSTRIAL POISONS
ON THE NERVOUS SYSTEM

[Comment: This is a review by A. M. Kovnatskiy of work on the clinical aspects and pathology of occupational neurointoxications carried out at the Institute of Labor Hygiene and Occupational Diseases, Academy of Medical Sciences USSR. The work reviewed by Kovnatskiy is published in Trudy Akademii Meditsinskikh Nauk SSSR, Vol 31, Moscow, 1954. Kovnatskiy's review is published in Gigiyena i Sanitariya, No 2, February 1955, pp 59-60].

Experimental investigations and numerous clinical observations have established the fact that the prolonged action of many of the industrial poisons upon the organism is marked, first of all, by changes in the central nervous system. In acute occupational intoxications, rapidly developing disturbances in the central nervous system, at times accompanied by a serious comatose condition, frequently occur. These facts also reveal that the changes which take place in the various organs and systems in cases of occupational intoxications depend upon the character and depth of the damages which toxic substances cause to the central nervous system.

All of this makes the study of the pathogenesis and clinical aspects of occupational neurointoxications absolutely essential.

The volume which is being reviewed contains 16 papers dealing with the pathophysiology, pathomorphology, and clinical aspects of neurointoxications of occupational origin. Most of the investigations bear on various problems connected with occupational poisonings by toxic substances widely used in industry (lead, tetraethyl lead, mercury, carbon bisulfide, manganese, and carbon monoxide). The volume also contains several articles which describe the clinical characteristics of intoxications as yet little studied (those with hydroxydiphenylhydrazines, butyl and amyl alcohols, and methylene chloride). The clinical articles discuss problems connected with the therapy of poisonings. Two articles are devoted exclusively to the therapy of industrial intoxications (the therapeutic value of vitamin B₁ in cases of toxic polyneuritis; diathermy of the liver as a method of therapy in cases of chronic mercurialism).

The volume under review contains a large quantity of factual material, accumulated in the course of many years at the Institute of Labor Hygiene and Occupational Diseases of the Academy of Medical Sciences USSR, on the changes which take place in the nervous system in cases of various intoxications. The investigations which have been conducted convincingly prove that the organism as a whole reacts to the action of toxic substances. Clinical investigations reveal changes in the most important organs and systems, and first of all in the nervous system. Disturbances of the functions of the analysors appear early in intoxications, making it possible to utilize methods appropriate thereto for the early diagnosis of industrial poisonings.

The results of the investigations which have been conducted are undoubtedly of theoretical and practical interest, and serve to broaden the knowledge of the practicing physicians in the matter of the timely diagnosis and therapy of occupational poisonings.

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The following shortcomings may be found in the volume:

In explaining that the changes in the various organs and systems in intoxications are due to disturbances of corticovisceral interrelationships, the authors fail, however, to explain the mechanisms of these disturbances under the action of some toxic substances.

The clinical articles published in the volume fail to provide data which would characterize the industrial environment, and particularly, fail to give information on the concentration of toxic substances in the quarters where the patients worked, making it impossible to evaluate fully the clinical data cited. Such separation of the organism from its medium is particularly inexcusable at an institute engaged in hygienic studies.

In an article written by M. N. Ryzhkova, G. N. Cherepanova, and R. V. Bilekh in regard to the early diagnosis of chronic poisoning with manganese, cases in which a number of symptoms noted in patients provide a basis for the conclusion that microorganic changes take place in the central nervous system, are unservedly assumed to represent early forms of the disease. The article fails to indicate the changes in the various organs and systems (the gastrointestinal tract) and in metabolism which frequently occur in chronic manganese poisoning.

No mention is made at all of the changes in the peripheral nervous system which frequently take place alongside the changes in the central nervous system in the cases of intoxications under discussion. It is strange that in recounting the occupations and industries in which manganese is widely used or encountered, the authors do not mention electric welding.

In an article by M. A. Kazakevich devoted to the clinical aspects of chronic intoxication by carbon bisulfide, the three stages of the development of the toxic process in carbon bisulfide poisoning, postulated by the author, are inadequately substantiated. The afflictions that strike the peripheral nervous system in carbon bisulfide poisoning, and are encountered as a rule among the general symptoms of intoxication, manifest themselves in different stages of the illness.

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